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The IMPACT compiler has for several years provided a simulation-based platform for general EPIC compiler and architecture research, focusing especially on developing instruction-level parallelism using predication, control speculation, and aggressive code analysis. The advent of the Intel Itanium Architecture provided the first opportunity to demonstrate the efficacy of these techniques in a real, general-purpose hardware environment. The concurrent acceptance of more complex and control-intensive benchmarks (SPEC 2000) and a 64-bit addressing model presented additional issues for EPIC compilers. The process of applying the traditional strengths of the IMPACT compiler to this complex new environment has yielded a useful framework for the prototyping of new techniques on IPF, as well as many valuable insights about compilation and performance on Itanium and Itanium 2. We present an overview of the IMPACT-ia64 compilation environment, differentiating it from available production compilers. Working from data gathered from extensive microarchitectural performance monitoring features on SPEC Cint2000, we also present a discussion of a few key performance issues encountered in the compiler's development to date and their implications for future work.